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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TOSHIMITSU KOHARA,
HIROSHI TAMAGAKI, and
YOSHIMITSU IKARI

Appeal 2010-004490
Application 10/523,815
Technology Center 1700

Before ADRIENE LEPIANE HANLON, KAREN M. HASTINGS, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL¹

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's decision finally rejecting claims 21-29. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

The subject matter on appeal relates to a method of producing an α crystal structure-based alumina film. Claim 21, reproduced below, is illustrative.

21. A method of producing an α crystal structure-based alumina film, comprising:

an initial first step of forming an undercoat of the alumina film having an α crystal structure under conditions suited for formation of α crystal structure alumina by sputtering of an aluminum metal target in an oxidizing gas-containing atmosphere; and

a subsequent second step of continuing to form the film on the undercoat by changing the film forming conditions whereby an α crystal structure alumina continues to be formed on the undercoat.

App. Br., Claims Appendix.²

The following Examiner's rejections are before us on appeal:

(1) Claims 21, 23, 26, and 27 are rejected under 35 U.S.C. § 103(a) as unpatentable over Zywitzki.³

(2) Claims 22, 25, 28, and 29 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Zywitzki and Sproul.⁴

² Appeal Brief dated July 1, 2009.

³ O. Zywitzki et al., *Effect of the substrate temperature on the structure and properties of Al_2O_3 layers reactively deposited by pulsed magnetron sputtering*, 82 Surface and Coatings Tech. 169-75 (1996).

⁴ US 5,789,071 issued August 4, 1998.

(3) Claim 24 is rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Zywitzki and Fu.⁵

B. DISCUSSION

The Examiner finds that Zywitzki discloses a method of producing a crystal structure-based alumina films. Ans. 3-4.⁶ According to the Examiner:

Zywitzki does not explicitly disclose the formation of the alumina structure in a two step process, but does disclose various temperature conditions in which a film may be formed and the resulting properties. No indication is given as to the order of these films or whether the films were indeed formed on the same substrate in a stacked manner. One of ordinary skill would recognize that the experiments were either performed on different substrates, each formed and tested separately or each layer was formed and tested subsequently on the same substrate, forming a stack of individual layers. The second scenario would read on the instant claims.

Ans. 4.

The Examiner also directs our attention to Zywitzki Figure 4 which depicts the hardness of Al_2O_3 coatings on heat-resistant steel at various substrate temperatures. Zywitzki, p. 173. The Examiner concludes that it would have been obvious to change the temperature during the sputtering process “for reasons of experimentation, energy savings, expected fluctuations from feedback controls or necessity to form a desired gradient coating.” Ans. 4.

Significantly, the Examiner does not direct us to any evidence that supports this conclusion. See *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir.

⁵ US 6,290,825 B1 issued September 19, 2001.

⁶ Examiner’s Answer dated November 25, 2009.

2006) (“rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).

The Appellants contend:

[I]t would make no sense for one skilled in the art to perform coating hardness testing to produce the hardness results shown in Fig. 4 by applying multiple coating layers one-over-the-other on the same substrate since this would produce meaningless results. . . . [T]he measured hardness of a given coating layer applied onto a previously applied layer would be affected by the hardness of the previously applied layer and would be different from the measured hardness of the given layer applied directly on the substrate. Therefore the test results of Fig. 4 would be meaningless in the case of multiple layers applied on the same substrate unless the reader was provided with a way to account for the effect of the underlayer on the measured hardness.

App. Br. 5-6.

The Examiner does not address this argument. Nonetheless, the Appellants’ position is reasonable based on the record before us.

The purpose of Zywitzki is to “investigate the influence of the substrate temperature on both structure and properties of Al_2O_3 layers that were deposited by pulsed magnetron sputtering (PMS).” Zywitzki, p. 170, para. 1. Based on the record before us, we conclude that one of ordinary skill in the art would have understood that this investigation is most effectively conducted by depositing single layers on individual substrates under uniform conditions. Thus, we conclude that the teachings of Zywitzki, at best, suggest choosing an appropriate temperature in a single step sputtering process to achieve desired layer characteristics. *See* App. Br. 6.

As for the remaining prior art references, the Examiner finds that Sproul and Fu disclose varying conditions during a deposition process. Ans. 5-9. However, the mere fact that it was known to vary conditions during a deposition process does not render the claimed method obvious where Zywitzki suggests that a single step process is desirable for the stated objectives.

For the reasons set forth above, we will not sustain the § 103(a) rejections on appeal.

C. DECISION

The decision of the Examiner is reversed.

REVERSED

sld

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